1. Simplify $\dfrac{(a^4b^{-3})^5}{a^{-4}b^7}$ and express your answer with positive indices.
2. Make h to be the subject of $3k = \dfrac{4-5h}{h+2}$.
3. Factorize
   (a) $3a^2 - 5ab - 2b^2$,
   (b) $3a^2 - 5ab - 2b^2 - 3a - b$.
4. The cost of a fan is \$300. When the fan is sold, the profit percentage is 26%.
   (a) Find the selling price of the fan.
   (b) If the fan is sold at a discount of 30%, find the marked price.
5. Solve $5^{\frac{x}{2}} = 125$.
6. In $\triangle ABC$, if $AB = 5$ cm, $BC = 6$ cm, $\angle ABC = 20°$, find AC.
7. Let $ABCD$ be a parallelogram, if $AB = 8$ cm, $BC = 12$ cm, and $\angle ABC = 140°$, find the area of $ABCD$.
8. Solve $x^6 + 63x^3 - 64 = 0$.
9. Solve for $0° \le x \le 360°$.
   (a) $\tan x = 1$.
   (b) $3\sin^2 x - 7\sin x - 6 = 0$.
10. Simplify $\dfrac{a^{-2}}{(\sqrt{a}b)^3} \times \dfrac{\sqrt[3]{b^4}}{\sqrt{a}}$ and express your answer with positive indices.
11. It is known that $\log_3 2 = p$ and $\log_3 5 = q$, express the following log using p and q.
    (a) $\log_3 10$.
    (b) $\log_3 \dfrac{15}{2}$.
12. Simplify $\dfrac{6}{k-18} + \dfrac{2}{5k+6}$.
13. It is known that $f(x) = 2x^3 - 19x^2 + kx + 21$ is divisible by $x - 3$.

(a) find the value of k.

(b) Hence, factorize $f(x)$.

14. It is known that $\begin{cases} y = kx^2 - 8x + 2 \\ 10x - y - 7 = 0 \end{cases}$ has only one real root.

(a) find the value of k.

(b) Solve the system of equations.

15. Suppose L_2 is perpendicular to $L_1 : 5x - 4y - 20 = 0$ and passes through $P(-3, 1.5)$. L_1 and L_2 cut x-axis at B and C respectively.

(a) Find the slope of L_1. Hence, find the slope of L_2.

(b) Find the equation of L_2.

(c) Find the intersection point of L_1 and L_2.

16. Let $BCDE$ be a quadrilateral, and A be a point on ED, such that $AE = 10$ cm, $AD = 12$ cm, $EB = 8$ cm, $\angle AEB = 75°$, $CD = 9$ cm and $\angle CDA = 82°$.

(a) Find AB.

(b) Find $\angle EAB$.

(c) Find the area of $\triangle ABC$.

17. Ken spent \$500 to buy some bottles of milk, 10 of them were broken during the transportation. If he sells the remaining for \$4 each, then the profit will be \$60. How many bottles of milk did he buy?

18. Suppose the relation between y and $\log x$ can be represented by $y = k \log x + n$, where k, n are constants. Further suppose the graph of the equation passes through $(0, 4)$ and $(4, 6)$.

(a) Find the value of k and n.

(b) Find x in terms of y.